UNITED STATES PATENT AND TRADEMARK OFFICE

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Ex parte BEE T. LOW and STEPHEN YAUSANG CHENG[1]

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Appeal 2016-004270
Application 13/202,375
Technology Center 1700

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Before BRADLEY R. GARRIS, AVELYN M. ROSS, and
JEFFREY R. SNAY, *Administrative Patent Judges.*

GARRIS, *Administrative Patent Judge.*

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134, Appellants appeal from the Examiner's
rejection under 35 U.S.C. § 103(a) of claims 1–17 as unpatentable over
Prieto et al. (US 2006/0199872 A1, published Sept. 7, 2006) ("Prieto") in
view of Ou (US 5,177,824, issued Jan. 12, 1993), Yung et al. (US 5,560,877,
issued Oct. 1, 1996) ("Yung"), Oriani et al. (US 6,111,020, issued Aug. 29,
2000) ("Oriani"), and Appellants' Admitted Prior Art (AAPA at Spec. ¶ 4)

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[1] Appellants identify Dow Global Technologies, Inc. as the real party in
interest. App. Br. 3.

(*see* the Office Action dated 15 August 2013; *see also* the Office Actions dated 24 December 2013, 28 November 2014, and 8 April 2015). We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

Appellants claim a method of making a foam article (e.g., footwear soles) that comprises subjecting the foam of a certain type of ethylene/olefin multi-block copolymer, referred to by Appellants as OBC (Br. 5), to a molding process, referred to by Appellants as a phylon or 2-stage foam process (*id.*), wherein the foam is compressed in a heated and then cooled mold under processing conditions including certain temperatures, compression ratios, and times thereby forming a foam article that maintains the compressed thickness and has certain compression set, hardness, and shrinkage properties (claim 1). Appellants also claim the article resulting from this method (claims 9 and 10).

A copy of representative claim 1, taken from the Claims Appendix of the Appeal Brief, appears below.

1. A method of making a foam article comprising:
(a) compressing a foam to a compressed thickness at a temperature from 145°C to 155°C in a mold for shaping the foam, wherein the compression ratio is from about 1.2 to about 1.8;
(b) cooling the mold to a temperature of greater than 30°C for 210 seconds to 270 seconds; and
(c) forming a foam article that maintains the compressed thickness and has
a compression set (after 24 hr) from 23.72.% to 53.2%,
a hardness (Type C with skin) from 55 to 61, and
a shrinkage from -1.1 % to -0.3%,
wherein the foam comprises from 50 wt% to 100 wt% of an ethylene/C_3-C_{20} α-olefin multiblock copolymer comprising at least 60 mole percent ethylene and having a linear block structure comprising hard segments and soft segments and:

(i) having a M_w/M_n from about 1.7 to about 3.5, at least one melting point, T_m from 115°C to 125°C in degrees Celsius, and a density, d, from 0.875 g/cc to 0.945 g/cc, wherein the numerical values of T_m and d correspond to the relationship:

$$T_m \geq -2002.9 + 4538.5(d) - 2422.2(d)^2; \text{ and}$$

(ii) having a M_w/M_n from about 1.7 to about 3.5, and is characterized by a heat of fusion, ΔH in J/g, and a delta quantity, ΔT, in degrees Celsius defined as the temperature difference between the tallest DSC peak and the tallest CRYSTAF peak, wherein the numerical values of ΔT and ΔH have the following relationships:

$$\Delta T > -0.1299(\Delta H) + 62.81 \text{ for } \Delta H \text{ greater than zero and up to 130 J/g,}$$
$$\Delta T \geq 48°C \text{ for } \Delta H \text{ greater than 130 J/ g,}$$

wherein the CRYSTAF peak is determined using at least 5 percent of the cumulative polymer, and if less than 5 percent of the polymer has an identifiable CRYSTAF peak, then the CRYSTAF temperature is 30°C; or

(iii) characterizing by an elastic recovery, R_e, in percent at 300 percent strain and 1 cycle measured with a compression-molded film of the ethylene/α-olefin block interpolymer, and has a density, d, in grams/cubic centimeter, wherein the numerical values of R_e and d satisfy the following relationship when ethylene/α-olefin block interpolymer is substantially free of a crosslinked phase:

$$R_e > 1481-1629(d); \text{ or}$$

(iv) having a molecular fraction which elutes between 40°C and 130°C when fractionated using TREF, characterized in that the fraction has a molar comonomer content of at least 5 percent higher than that of a comparable random ethylene interpolymer fraction eluting between the same temperatures, wherein said comparable random ethylene interpolymer has the same comonomer(s) and has a melt index, density, and molar comonomer content (based on the whole polymer) within 10 percent of that of the ethylene/α-olefin block interpolymer; or

(v) having a storage modulus at 25°C, G'(25°C), and a storage modulus at 100°C, G'(100°C), wherein the ratio of G'(25°C) to G'(100°C) is in the range of about 1:1 to about 9:1; or

(vii) having at least one molecular fraction which elutes between 40°C and 130°C when fractionated using TREF, characterized in that the fraction has a block index of at least 0.5 and up to about 1 and a molecular weight distribution, M_w/M_n, greater than about 1.3; or

(viii) having an average block index greater than zero and up to about 1.0 and a molecular weight distribution, M_w/M_n, greater than about 1.3.

Appellants' arguments are directed to independent claim 1 with no separate arguments specifically directed to claims 2–17 (App. Br. 9–14). Therefore, claims 2–17 will stand or fall with representative claim 1.

We sustain the above rejection for the reasons expressed by the Examiner and below.

In rejecting claim 1, the Examiner finds that Prieto discloses the claimed OBC foam useful for making footwear soles (15 August 2013 Office Action 2–4) but "does not disclose[] a process for obtaining such footwear parts" that involves the phylon process as claimed (*id.* at 4). Concerning this deficiency, the Examiner additionally finds that Ou, Yung, Oriani, and AAPA disclose making footwear soles from polymer (e.g., EVA) foam via the phylon process and evince the parameters of this process (i.e., temperatures, compression ratios, and times) are recognized in the prior art as result-effective variables (*id.* at 4–5). Based on these findings, the Examiner concludes that it would have been obvious for one of ordinary skill in the art to make footwear soles from OBC foam as desired by Prieto via the phylon process and to determine through routine experimentation workable or optimum values for the parameters of this process, thereby yielding the claimed method (*id.* at 5).

Appellants argue "the Examiner admits none of the *cited references* discloses or suggests Appellant's [sic] claimed method" (App. Br. 12). As support for this argument (*id.*), Appellants rely on the Examiner's statement "[t]he applicants are correct that none of the references disclose or suggest that the phylon process using OBC copolymers requires less cooling time and, possibly, higher cooling temperatures, i.e., reduced cycle time" (8 April 2015 Office Action 6).

Appellants do not explain why they believe the Examiner's above quoted statement supports their argument that the Examiner admits the method of claim 1 is not disclosed or suggested by the applied prior art. Moreover, Appellants fail to explain why this statement undermines the Examiner's conclusion that it would have been within the skill of an artisan through routine experimentation to determine appropriate parameters such as cooling times and temperatures in using the phylon process for making footwear soles from OBC foam. For these reasons, we do not consider the Examiner's statement to be an admission militating against the rejection of claim 1.

Appellants also contend that "OBC performance in a 2-stage foam [i.e., a phylon] production is unpredictable in view of EVA 2-stage foam production" (App. Br. 12).

However, the rejection of claim 1 is not based on using EVA 2-stage foam production for predicting OBC performance in a corresponding production. In addition, Appellants again fail to explain why they believe their contention undermines the Examiner's obviousness conclusion regarding process parameters.

Appellants argue "none of the *cited references* recognize high-Tc [i.e., high crystallization temperature] OBC as a result-effective variable with respect to foam cooling temperature" (App. Br. 13).

In response, the Examiner correctly explains that Appellants' argument misinterprets the rejection which involves art-recognized, result-effective process variables such as cooling temperatures rather than the polymer property Tc (Ans. 7–8). We emphasize that Appellants do not dispute the Examiner's explanation in their Reply Brief.

Appellants further argue that the Examiner has based the rejection on improper hindsight by referring to paragraph 166 of the Specification (App. Br. 14 (citing the 8 April 2015 Office Action 7)).

Appellants' argument is not persuasive. It is true that the Response to Arguments section of the 8 April 2015 Office Action refers to the paragraph 166 disclosure of a relationship between high crystallization temperatures and cooling temperatures (8 April 2015 Office Action ¶ bridging 6–7). However, the Examiner expressly states that this reference to paragraph 166 is made to support the position that phylon processing conditions are governed by the properties of the polymer foam (i.e., the processing conditions for Prieto's OBC foam presumably would differ from those for EVA foam) (*id.*). Furthermore, as explained previously, the Examiner's obviousness conclusion does not involve the high crystallization temperature of OBC but rather is based on determining appropriate values for result-effective variables such as cooling temperatures.

In their Reply Brief, Appellants contest the rejection by presenting a Table 1, which displays the respective method conditions of claim 1 versus the applied prior art, and arguing "Table 1 shows that no combination of the cited references and paragraph 4 [of the Specification] discloses a process that starts with OBC foam and also utilizes values within the claimed cooling temperature (>30°C) and within the claimed cooling time (210-270 seconds)" (Reply Br. 4).

Contrary to Appellants' belief, the Examiner's obviousness conclusion is not revealed to be erroneous simply because Table 1 shows that the cooling temperatures and times disclosed by Ou and Oriani for EVA foam differ from those recited in claim 1 for OBC foam. As indicated earlier, the obviousness conclusion is not based on the particular cooling

temperatures and times disclosed in the prior art for EVA foam but instead is based on determining through routine experimentation effective cooling temperatures and times for OBC foam specifically. The argument under consideration has no apparent relevance to the Examiner's conclusion that such a determination would have been obvious.

Finally, Appellants contend that "[t]he criticality of the cooling time range of 210-270 seconds for achieving the unexpected result of maintaining compressed thickness is shown in Table A below (reproduced below from Appellant's [sic] specification)" (Reply Br. 5).

As an initial matter, we observe that the Reply Brief does not identify the specific location of the referenced Table A in their 19 August 2011 Specification of record.[2] Correspondingly, the Reply Brief does not identify any Specification disclosure that characterizes as unexpected the result shown in the referenced Table A. For these reasons, the contention regarding an unexpected result appears to be merely an unsupported statement presented by the attorney who wrote the Appeal and Reply Briefs. As such, the contention lacks persuasive merit. *See In re Geisler*, 116 F.3d 1465, 1470–71 (Fed. Cir. 1997) (reiterating that unexpected results must be established by factual evidence and holding that attorney's statement that improved results were "surprising" insufficient to establish unexpected results).

In summary, Appellants fail to show harmful error in the Examiner's § 103 rejection of claims 1–17.

The decision of the Examiner is affirmed.

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[2] Our independent search of the 19 August 2011 Specification reveals no such Table A.

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED